National Aeronautics and Space Administration

Aerospace Engineer

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Aerospace/Software Engineer
Lead, Desktop Flight Simulation

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I play with a flight simulator all day! Ok, seriously, I lead and actively participate in the development of desktop flight simulation tools for manned and unmanned vehicles. I also develop mathematical models and control laws for helicopters and rotorcraft aerial robots. Some of my secondary tasks include expanding software tools originally developed for in-house research for commercialization, developing documentation and training for these tools, conducting demos, and writing conference papers presenting our work.

Areas of expertise:

- Flight Simulation
- Rotorcraft and aerial robot mathematical modeling
- Flight control development

How I first became interested in this profession:

I have always loved flying vehicles. I played with toy airplanes as a child, drew airplanes anytime I had something to draw with, flew model airplanes when I could, and read every aviation magazine/book I could get my hands on. So it's no surprise that from an early age I wanted to someday be working on flying machines in one form or another. Mission accomplished.

What helped prepare me for this job:

All the math, physics, and engineering courses that I took at Cal Poly and at Stanford helped me to prepare. It's not so much that they teach you the job, but they give you a solid foundation and prepare you to think and find answers on your own.

My role models or inspirations:

There were many as I was growing up, but the Wright brothers are certainly close to the top. They decided that they could figure out how to fly and they did. They didn't think that just because nobody had ever done it before they wouldn't be able to either. Also, they didn't stop after they failed the first time or the second time or the time after that. I wish they were still alive and could fly aboard a Boeing 747 and see how far we've come.

My education and training:

- BS, Aeronautical Engineering, California Polytechnic State University, San Luis Obispo
- MS, Aeronautics and Astronautics, Stanford University

My career path:

Sixteen years as an Aerospace Engineer with US Army Aeroflightdynamics Directorate
Three years as Senior Principal Software Engineer, Raytheon ITSS
Now, Lead for Desktop Flight Simulation, ARH, UARC

What I like about my job:

In a lot of ways I have a dream job. I play with a flight simulator all day and get paid for it. I work on simulating, and then tailoring the flying characteristics of the entire aircraft. It's a rush when responses generated by a bunch of mathematical equations you put together closely resemble the flying characteristics of a real flying vehicle.

What I don't like about my job:

Like any other job, sometimes you have to do paperwork, attend meetings, make presentations, and do demos. But even presentations and demos can be fun as it gives you an opportunity to show others what you've been doing and gives others the ability to give you helpful feedback.

My advice to anyone interested in this occupation:

Study hard. Mathematics and science are difficult, but that doesn't mean they're not fun. Next time you play a video game just think about the amount of math and science that has been used to make it possible to play the game. Without math and science, most everything that makes your life what it is today would not be possible. Study hard; you'll be very glad you did.

Additional Resources:

- American Institute of Biological Sciences
  http://www.aibs.org
- American Physiological Society
  http://www.faseb.org/aps
- American Society for Biochemistry and Molecular Biology
  http://www.biophysics.org/biophys/society/biohome.htm
- American Society for Microbiology
  http://www.asmusa.org
- Astrobiology Summer Academy
  http://academy.arc.nasa.gov/
- Biotechnology Industry Organization
  http://www.bio.org/welcome.html
- Graduate Student Researchers Program
  http://spacelink.nasa.gov/Instructional.Materials/NASA.Educational.Products/Graduate.Student.Researchers.Program.Brochure/.index.html
- MATHCOUNTS Competition
  http://mathcounts.org/
- Minority University Research and Education Programs
  http://mured.nasaprs.com/
- NASA Cooperative Education Program for college students
  http://spacelink.nasa.gov/Educational.Services/NASA.Education.Programs/Student.Support/NASA.Cooperative.Education.Program/.index.html
- NASA Jobs
  http://nasajobs.nasa.gov/
- NASA Office of Life and Microgravity Sciences and Applications
  http://www.hq.nasa.gov/office/olmsa/
- NASA SHARP Internship Program for high-schoolers
  http://www.mtsibase.com/sharp/
- NASA Student Employment
  http://nasajobs.nasa.gov/stud_opps/employment/index.htm
- NASA Student Involvement Program student contests
  http://www.nsip.net/index.cfm
- Order NASA career videos such as "Engineers: Turning Ideas into Reality," "Careers: Aerospace Engineer" or "Reaching for the Stars" from NASA CORE.
  http://core.nasa.gov
- Student's Guide to Astrobiology
  http://www.astrobiology.com/student.html
- Tech-Interns.com
  http://www.tech-interns.com/

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